Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (CURRENTLY AMENDED) An isolated, homogeneous population of mesenchymal stem cells which can differentiate into cells of more than one connective tissue type, wherein said mesenchymal stem cells are obtained from bone, wherein soft tissue components associated with bone surfaces have been removed.

2. (ORIGINAL) The mesenchymal stem cells of claim 1, wherein said mesenchymal stem cells are obtained from human trabecular bone.

3. (ORIGINAL) The mesenchymal stem cells of claim 1, wherein said mesenchymal stem cells are obtained from human iliac crest.

4. (ORIGINAL) The mesenchymal stem cells of claim 1, wherein one of said connective tissue types is selected from the group consisting of bone, cartilage, adipose, tendon, ligament, and dermis.

5. (ORIGINAL) The mesenchymal stem cells of claim 1, wherein said mesenchymal stem cells are transiently or stably genetically engineered to express one or more gene products.

6. (ORIGINAL) The mesenchymal stem cells of claim 5, wherein said one or more gene products are members of the transforming growth factor-β superfamily.

7. (ORIGINAL) A therapeutic composition comprising the mesenchymal stem cells of claim 1 and a pharmaceutically acceptable carrier, wherein said mesenchymal stem cells are present in an amount effective to produce connective tissue cells.

8. (ORIGINAL) The therapeutic composition of claim 7, wherein said connective tissue is selected from the group consisting of bone, cartilage, adipose, tendon, ligament, and dermis.

9. (ORIGINAL) The therapeutic composition of claim 7, wherein said mesenchymal stem cells are transiently or stably genetically engineered to express one or more gene products.

10. (CURRENTLY AMENDED) An isolated, homogeneous population of ~~bone derived~~ mesenchymal stem cells capable of differentiating into cells of more than one connective tissue type wherein said mesenchymal stem cells are derived from the mineralized matrix of bone and, wherein said ~~bone derived~~ mesenchymal stem cells are obtained from the mineralized matrix of the bone by mincing the bone into fragments and removing the adherent cells from the bone using collagenase treatment and culturing the collagenase treated cells to induce growth of mesenchymal stem cells.